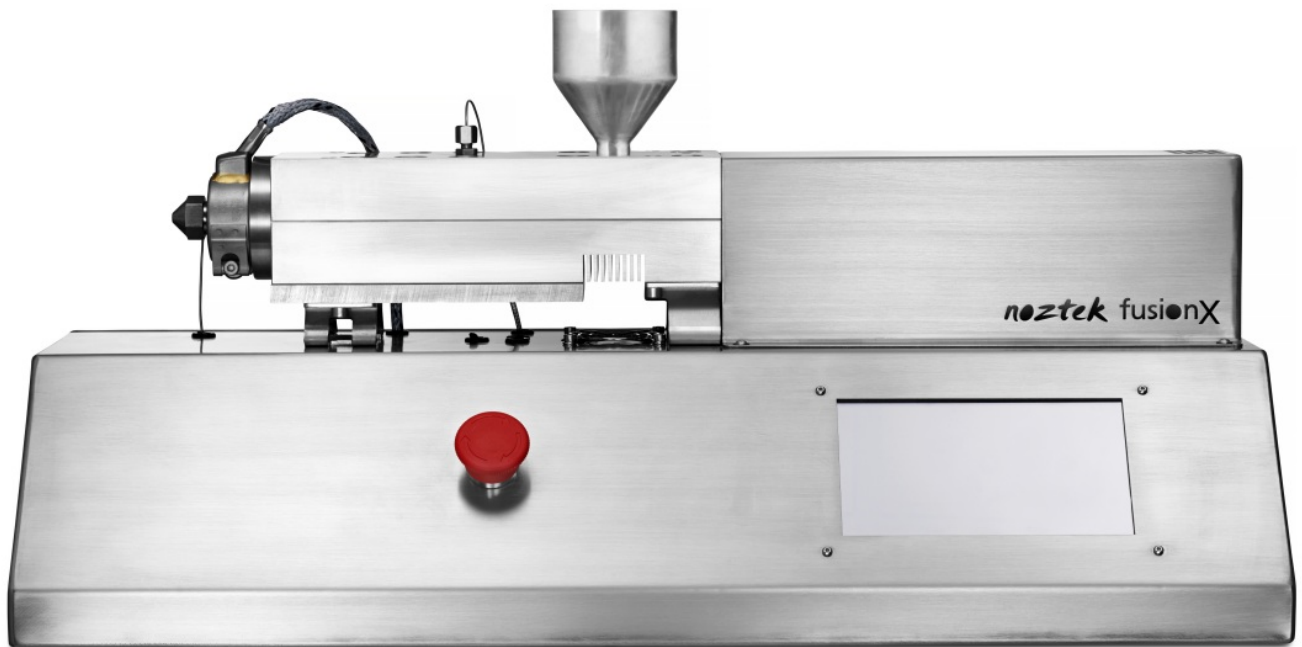




noztek fusionX Mixing Lab Extruder User Manual

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noztek fusionX Mixing Lab Extruder



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IN THE BOX

fusionX – fully assembled

Accessories:

Hopper weight

- This can be used to press the material in the hopper into the feed section of the screw and is especially useful when using light powdered materials

Torque wrench

- Used to tighten and loosen the bolts on the front and top of the block. Make sure the wrench is set to 24Nm when tightening the top bolts and 18Nm for the front nozzle holder bolts.

4 x M8 35mm grub screws

(These are inserted into all four corners of the block, tightened in turn to split the block apart for cleaning)

4 x M4 40mm bolts

- Used to remove the mixing blades)

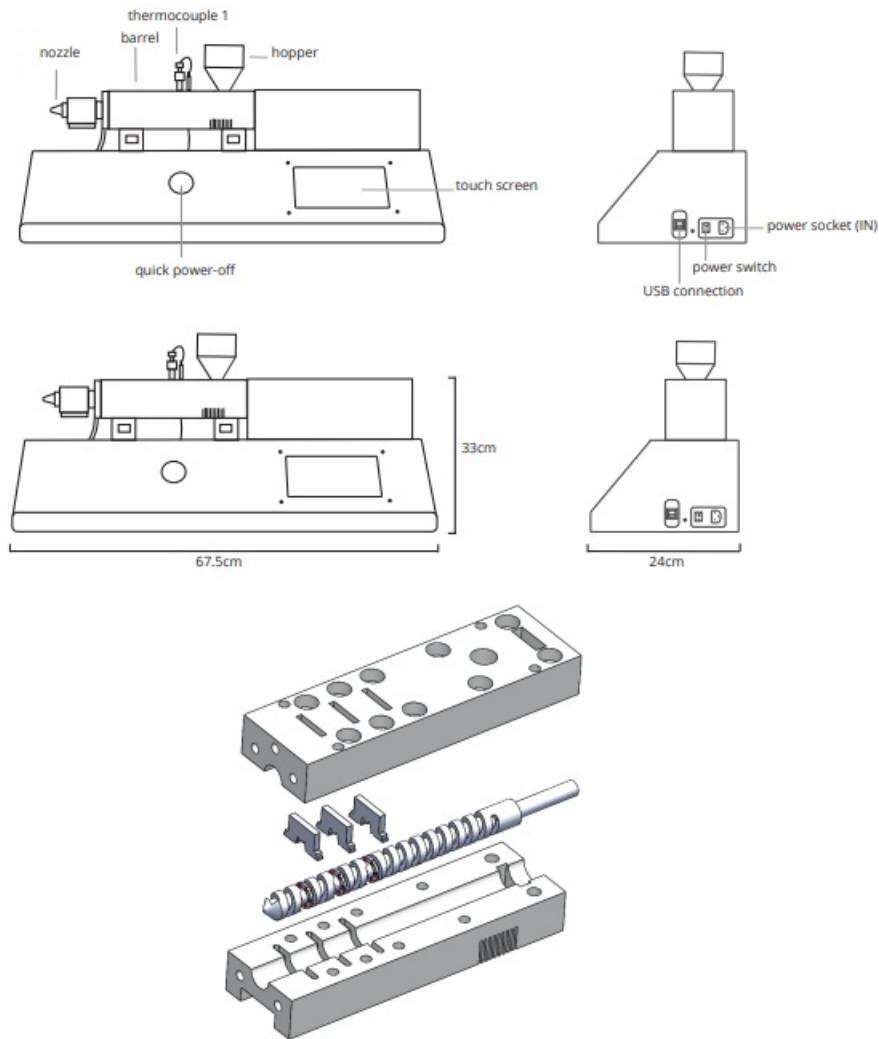
Copper grease

- When reassembling the block it is advisable to coat the thread with this anti seize copper solution. Also when swapping or replacing the nozzle, coat the thread with the copper slip.

FusionX protective cover

- To be used when dismantling the block to protect the chassis from being scratched.

DIAGRAMS



WARRANTY

- Equipment manufactured by Noztek carries the standard machine tool guarantee of freedom from defects in workmanship and material for one year from date of shipment.
- TO INSURE THAT YOUR WARRANTY IS HELD IN EFFECT, PROPER OPERATION PROCEDURE MUST BE OBSERVED.
- NOTE: READ THE SAFETY PRECAUTIONS BEFORE OPERATING THIS MACHINE.

SAFETY

1. Carefully read the instruction manual.
2. Learn the proper, safe use and limitations of the equipment.
3. DO NOT operate or use this equipment for any purpose other than its intended use.
4. DO NOT modify this equipment.
5. DO NOT perform adjustments or maintenance while system is operating or energize
6. DO NOT clean the equipment with flammable solvents.
7. DO NOT wash down the equipment with water. This could cause an electrical hazard.
8. DO NOT probe into extruder vent with the machine running. Never Use a metal probe in the vent area. The screw may shear the probe, causing extensive damage to the barrel and screw. A wooden probe is

recommended.

9. DO wear a face shield, insulated gloves when operating and when in close proximity to the extruder during operation. These protective items must also be worn when adjusting the die, cleaning the screw, etc. The extruder temperatures are extremely hot and failing to protect yourself may cause serious injury.
10. The feed hopper MUST be installed on the extruder feed section at all times when in operation
11. NEVER put hands in the feed section or vent to remove material.
12. DO NOT switch on the motor until the recommended temperature has been reached.

TECH SPECS

- 1000w rectangular ceramic heater (max temperature 500c)
- DAK Nozzle Band Heater 35D 25L 230-250V max- .210W (max temperature 450c)
- Auto switching 110v/220v Traco power supply 24V 10 amp
- Precision machined solid stainless steel barrel
- DC motor 17 RPM – 17 Nm torque
- Precision turned bespoke stainless steel mixing screw
- 7 inch TFT touch screen
- Stainless steel micro hopper (with hopper weight)
- 1.75mm and 3mm stainless steel nozzles
- 3 sets (6 in total) of hardened steel cutting blades 10mm, 3mm and 1mm

POWER SWITCH AND START UP

To begin, first cuse the power switch on the side of the machine to power up.

Powering up will take just a few moments, after which you'll use the touch screen to set all extruding parameters and set the machine to begin.

TEMPERATURE SETTINGS

You are able to set two temperatures, the extruding temperature and the mixing temperature.

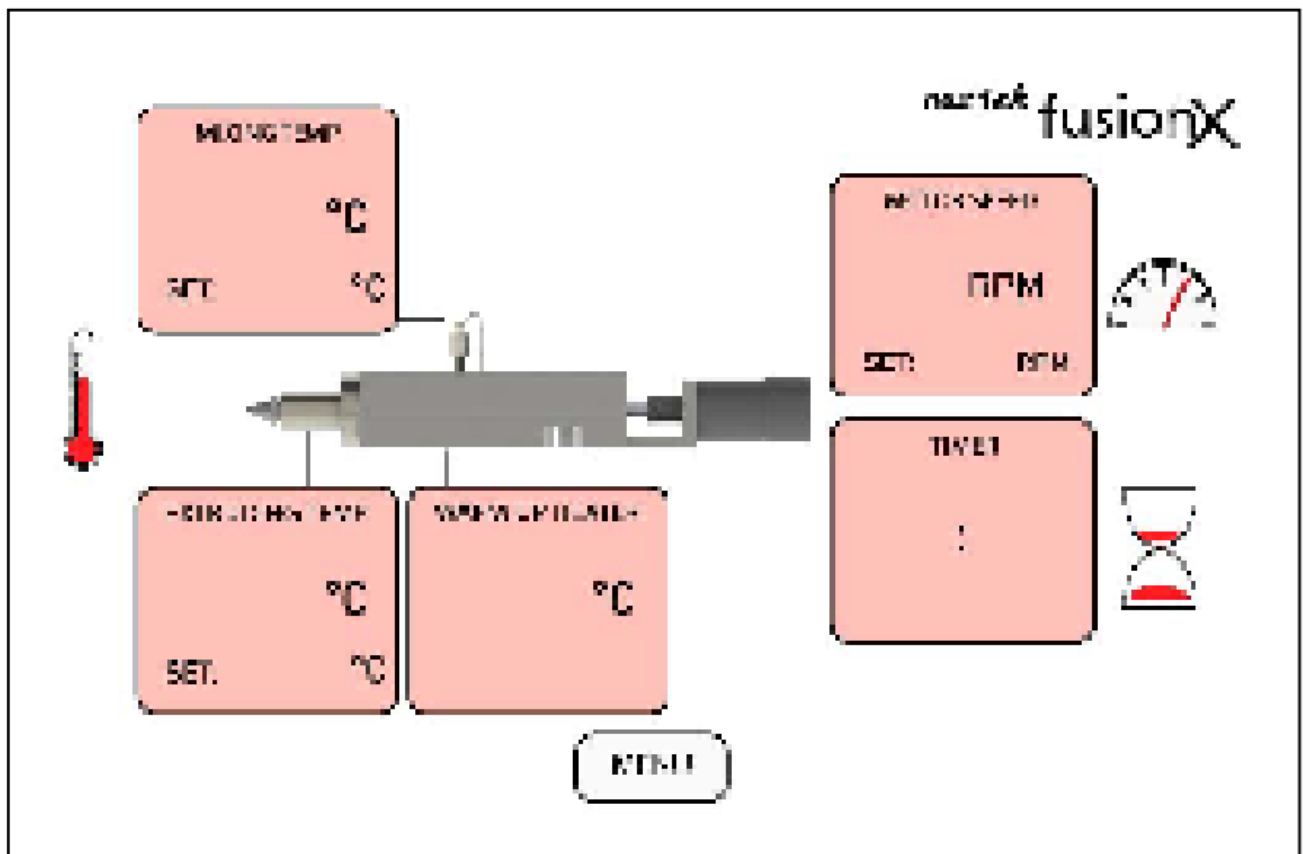
To toggle between °C & °F, tap on °C/°F directly.

USER INTERFACE

1. HOME

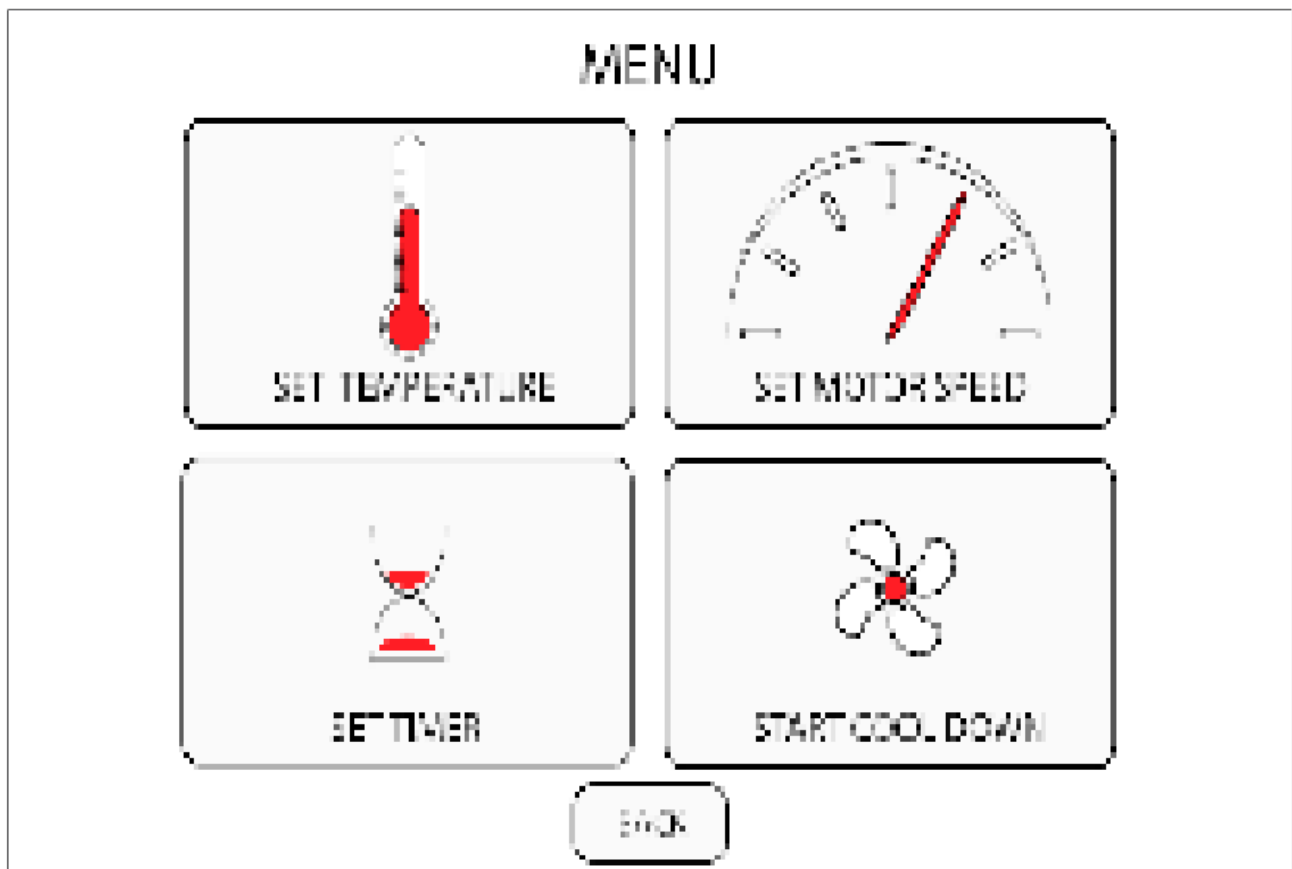
This screen shows all your settings, and appears red to begin with as nothing has been set. As you define settings, the corresponding boxes will turn green to show that they are ready to go.

Press MENU to begin.



2. MENU

This is where you control the settings. Use the three 'set' buttons to control the respective settings for the run.

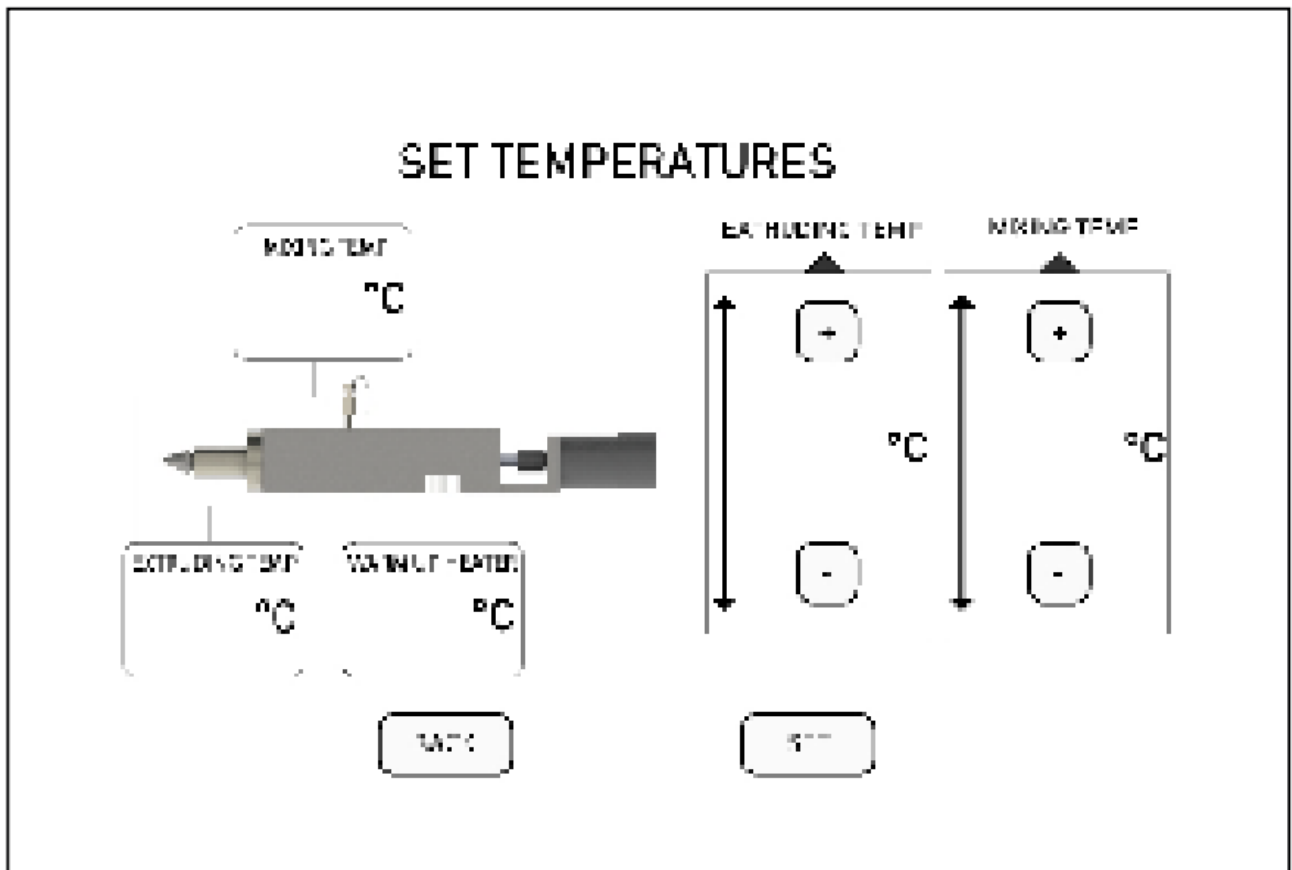


3. SET TEMPERATURES

Here you can set the mixing temperature and the extruding temperature. Use the slider and/or the + and – buttons to control the settings.

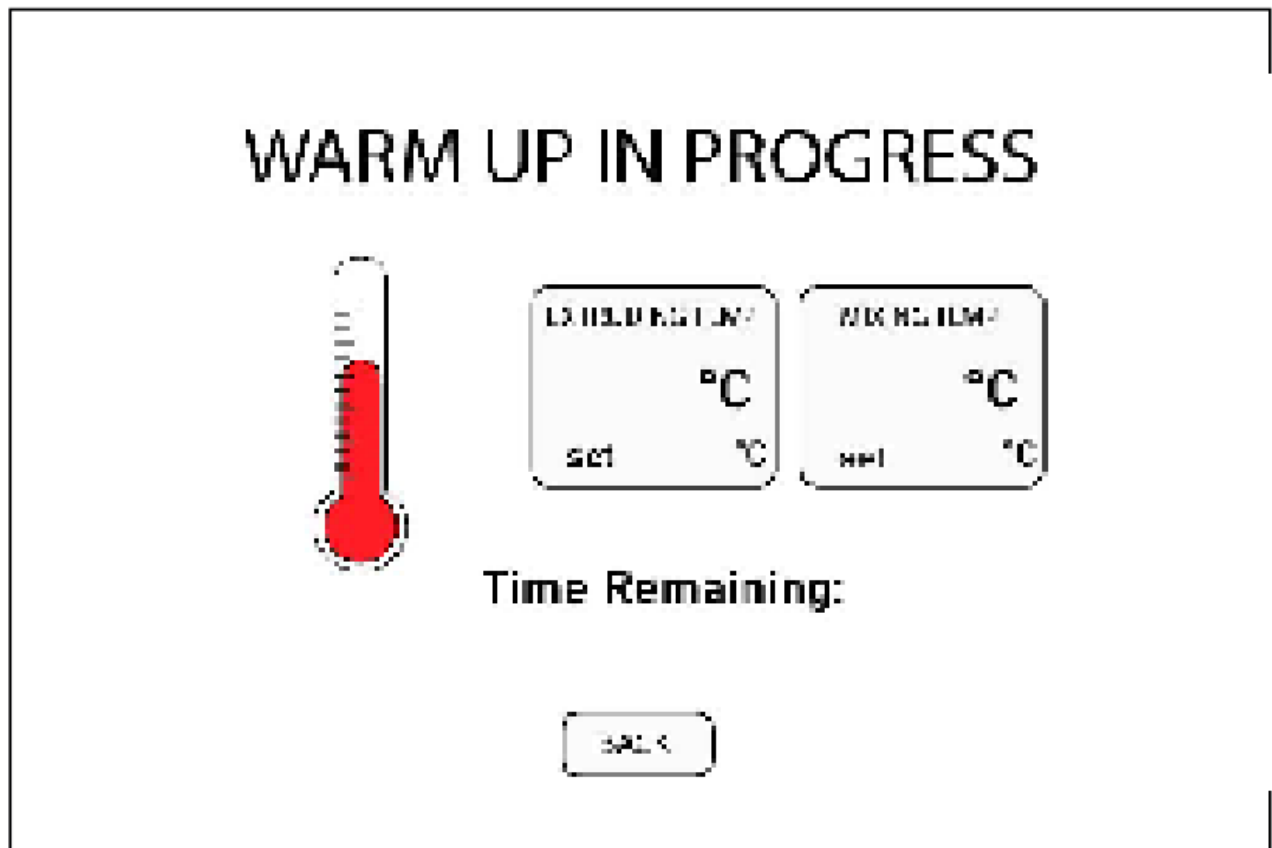
(please find more guidance on temperature settings on p. 7)

Pressing SET will take you to the WARM UP screen



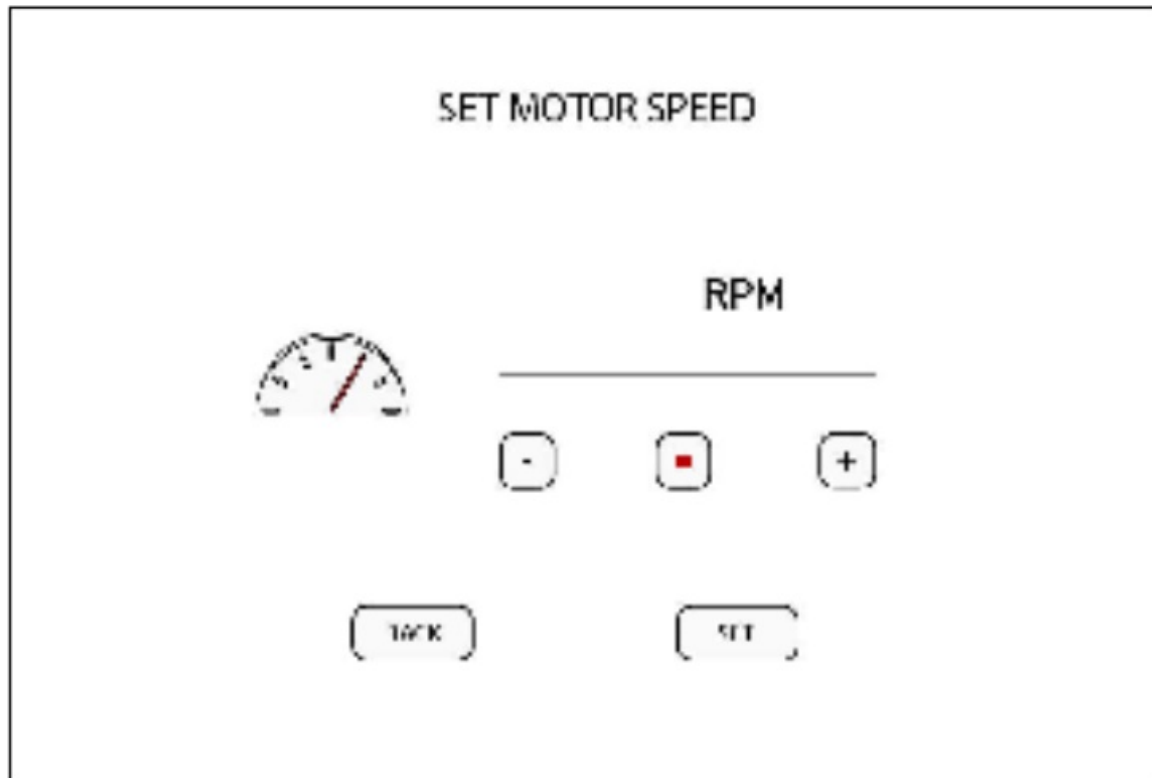
4. WARM-UP

This screen has a timer to allow the machine to warm to the correct temperature. You will not be able to escape this screen until the warm-up is complete, at which time, you will return to the HOME screen.



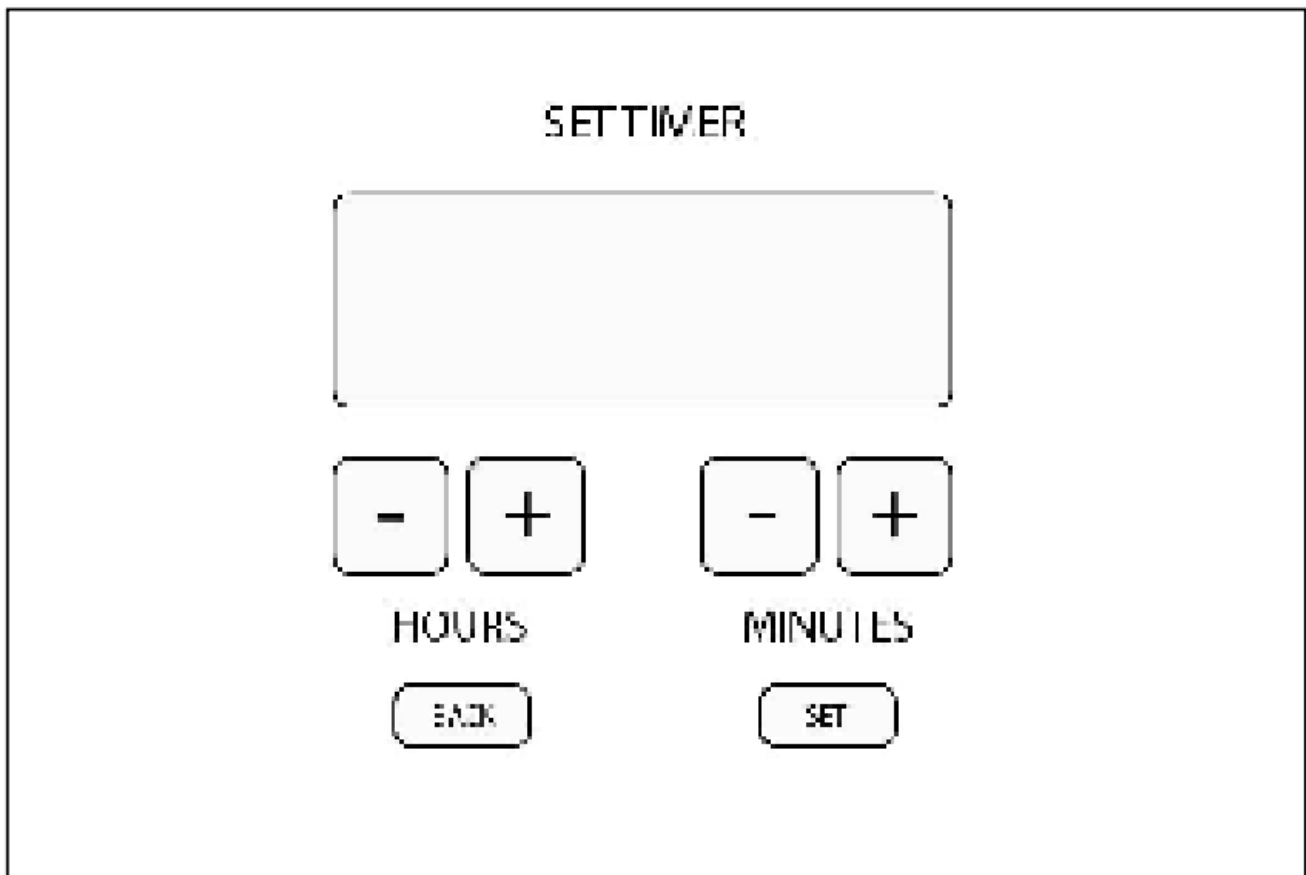
5. SET SPEED

This sets your extrusion speed. Maximum speed is _____



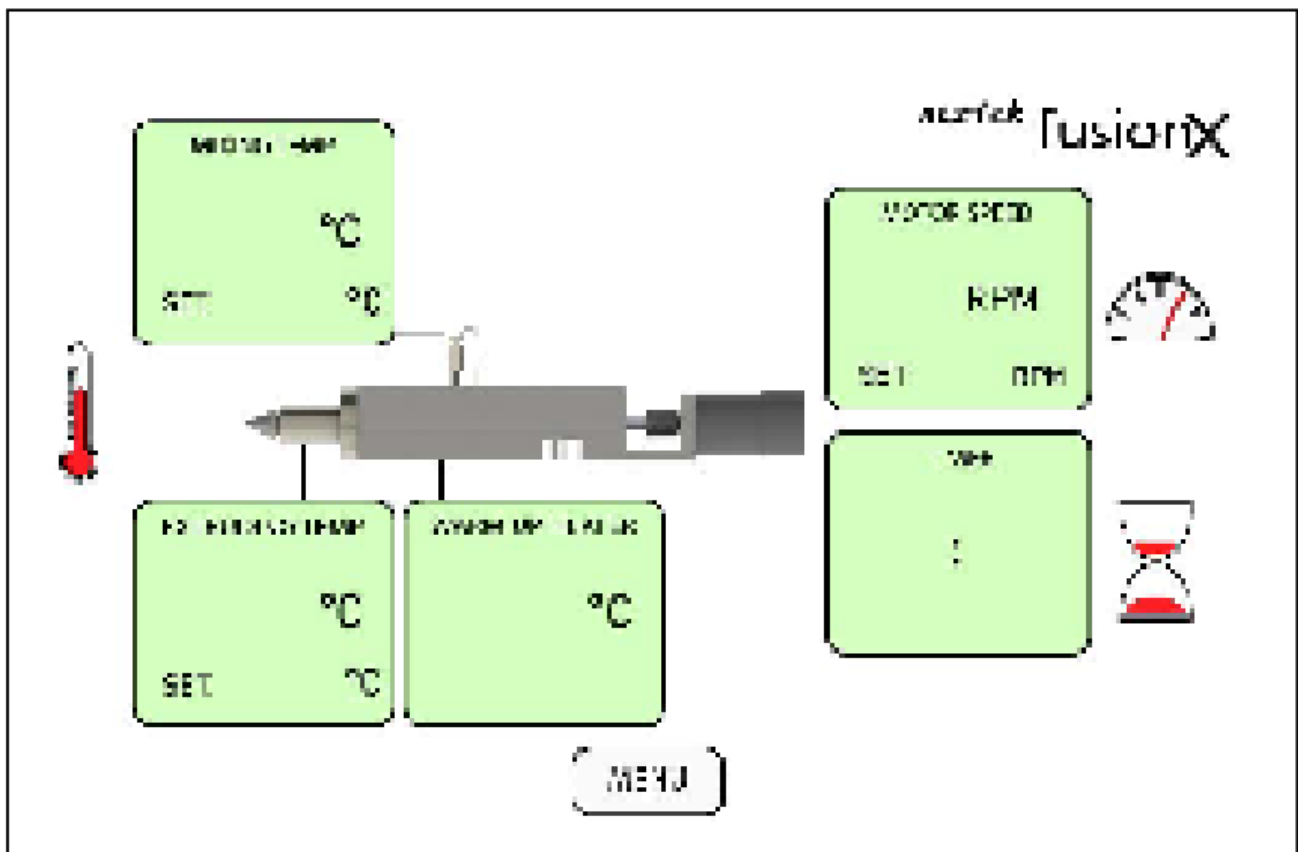
6. SET TIMER

This represents the time you want to extrude the material



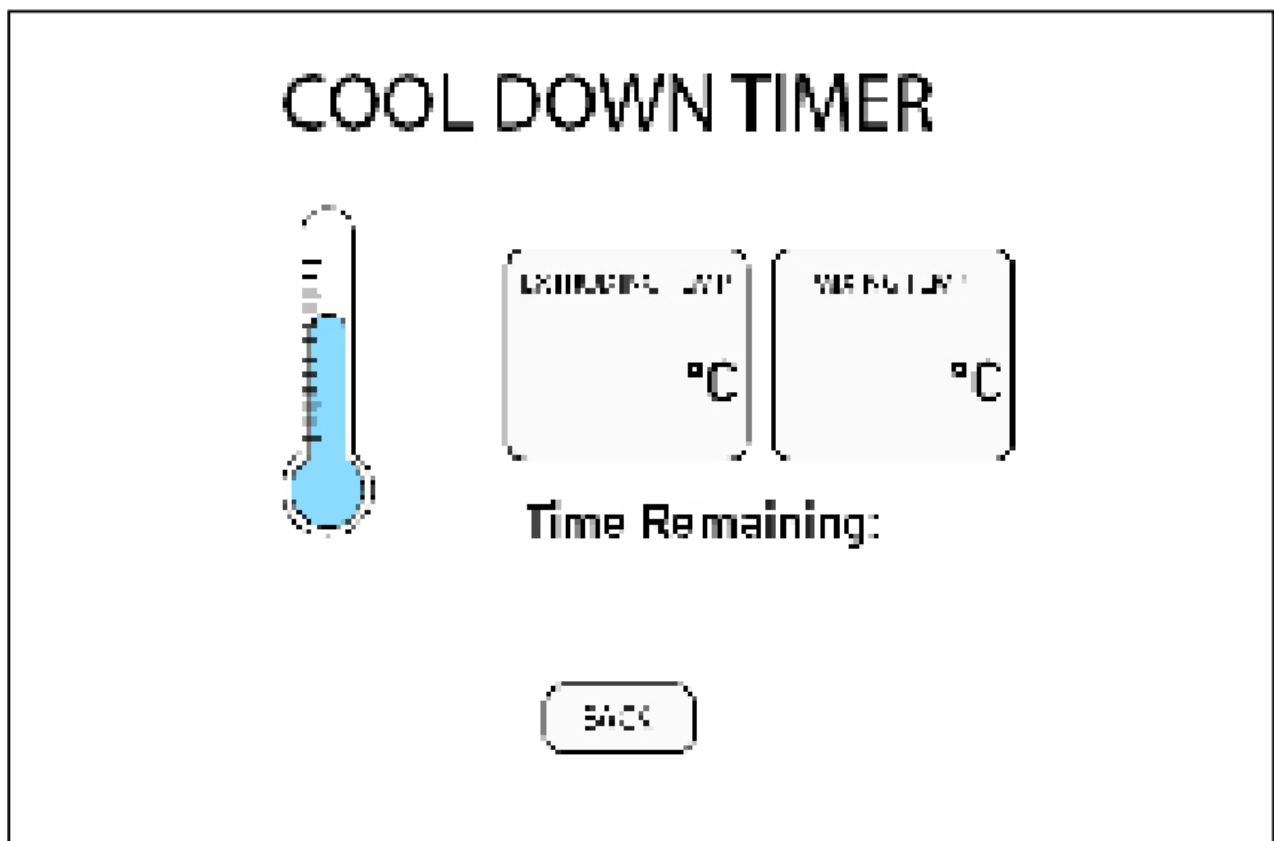
7. HOME (READY)

When you see that all boxes are green, you are ready to extrude. Press the Motor box to begin.



8. COOL DOWN

This screen will show whilst the cool down is happening. The preset is 62 minutes



CONNECTING THE fusionX TO YOUR COMPUTER

1. Download the Noztek Controller software from our website – <https://www.noztek.com/software-download/>

2. Connect the fusionX machine to the laptop with a USB cable.
3. Once the cable is connected and the controller software has been opened on the laptop, you can control the settings from the laptop interface
 - To change temperature or the motor settings. enter the value you want in the relevant field using the keyboard and then press "Set".
 - To activate or deactivate the fanpress the "ON/OFF" button next to "Fan state".
 - To visualize the data on a graph, go to Display > Display data on graph.
 - To export you data just click on "Export data to .csv" on the bottom right of the window.

For more in depth guidance on the controller software, please find the dedicated controller software manual in the manuals section of our website

CLEANING

Make sure that most of the material has been extruded from the barrel before cleaaning Please use the fusionX protective cover provided to protect the main body of the machine from any chemicals used in the cleaning process.

The cover has been custom made for the machine, please place each tab between the cables and fixtures underneath the barrel and the motor (back lays down first). Use the velcro to keep the cover pieces in place.

OPENING THE BARREL

1. Unscrew the 4 bolts connecting the motor casing, pull motor casing back or remove.
 2. Unscrew the two front and two rear grub screws connecting the couplings to the screw and pull this back until the coupling has disengaged from the screw spindle.
 3. Remove both thermocouple couplings (one connected to the nozzle and the other on top of the block).
 4. Remove the front nozzle and unbolt the front nozzle bracket (5 x M8 bolts),
 5. Remove the 10 M10 bolts on the top of the block
 6. Located on the top block are four M5 allen bolts ('block splitters'). Screw down each corner 5 or
 7. turns and continue until the top block splits apart from the bottom section.
 8. To remove the screw gently lift the front tip and the screw should come loose from the bottom barrel block (Depending on the type of material debris in the barrel a solvent may be required to assist the removal process).
- NOTE** – We do not recommend that you remove the bottom half of the barrel from the base. We advise that you clean the barrel in situ.
9. The cutting blades can be removed by levering each blade individually out of it's slot. If this proves difficult, use the small pins provided to push them out from thee other side of the block, through each of the small holes uin the middle of the black. *Make sure both flat surfaces of the barrel are completely clean before reassembly.*

Copper grease (provided) : When reassembling the block it is advisable to coat the thread with this anti seize copper solution.

Please also make sure both block surfaces are perfectly clean. Place the top on the lower bleck and bolt on the nozzle holder in the front (finger tight), this will align both sections. Then tighten all eight M8 bolts on the top of the block using the torque wrench provided (set to 24Nm). and tighten the nozzle holder again at 24 Nm.

CHANGING THE NOZZLE

Before attempting this operation please use insulated gloves. To switch between nozzle sizes to heat up the unit to 175°C. Unscrew the nozzle, clean off any excess plastic from the internal threads, then screw on new nozzle

BLENDING/MIXING

All our fusionX extruder's are shipped with three sets of hardened cutting blades. Usually these are placed in sequence within the block. For example the 10mm blade would be first in line, then the 3mm and lastly the 1mm blade. This ensures a gradual hot melt mixing set up, so by the time the material reaches the nozzle it is thoroughly blended.

For materials that require more extensive blending, the Nortek Pelletizer can be utilised to cut the filament in order to be reinserted back into the unit.

LUBRICATION

The thrust bearing assembly will require occasional lubrication; this is a relatively simple operation, when the barrel is split remove the screw and squirt a 2 second burst of a lubricant like WD40 Lithium Grease around the outer diameter of the bearing. For optimal performance we recommend that this procedure is carried out every 20 hours of operation.

BARREL JAM

Depending on what type of material you are using, you may experience a barrel jam. If at any time during extrusion the motor starts to labour and slow right down then you should switch off the motor immediately. In the first instance you can raise the temperature by 30°C and turn on the motor. Failing that, split the barrel and remove any debris

COOL DOWN


There are two fans connected to the main case: One is to cool the motor, the other is to cool the heat sink section underneath the hopper.

This has been installed to reduce any hopper neck clumping when extruding at higher temperatures.

Customer Support

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fusionX

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References

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- [User Manual](#)